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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.     | CONFIRMATION NO. |
|---|-------------|----------------------|-------------------------|------------------|
| 10/720,973  | 11/24/2003  | Wolfgang Singer      | 637.0012USX             | 5197             |
| 7590  | 10/13/2005  |                      | EXAMINER                |                  |
| CHARLES N.J. RUGGIERO, ESQ.<br>OHLANDT, GREELEY, RUGGIERO & PERLE, L.L.P.<br>10th FLOOR<br>ONE LANDMARK SQUARE<br>STAMFORD, CT 06901-2682 |             |                      | GUTIERREZ, KEVIN C      |                  |
|   |             |                      | ART UNIT                | PAPER NUMBER     |
|   |             |                      | 2851                    |                  |
|   |             |                      | DATE MAILED: 10/13/2005 |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

EF

|                              |                             |                  |
|------------------------------|-----------------------------|------------------|
| <b>Office Action Summary</b> | Application No.             | Applicant(s)     |
|                              | 10/720,973                  | SINGER ET AL.    |
|                              | Examiner<br>Kevin Gutierrez | Art Unit<br>2851 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 24 November 2003.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 27-49 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 27-49 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 24 November 2003 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. 10/042,122 & 10/090,470.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

|  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2-23-04 &amp; 7-14-04</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "3" has been used to designate both collector mirror (page 13, lines 2-3) and collector lens (page 13, line 26). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Claim Objections*

2. Claim 49 is objected to as being an improper dependent claim. The claim is directed to a microelectronic component with the projection exposure apparatus of 47. However, it is conceivable that another apparatus other than the apparatus of claim 47 can manufacture the device. For example, another apparatus such as a microlithography system without the raster elements as claimed can manufacture the

device. Hence, the claim does not further limit claim 47 as required by 35 USC 112.  
4<sup>th</sup> paragraph.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 27-28 and 31-49 are rejected under 35 U.S.C. 102(b) as being anticipated by Koch et al (6,195,201).

Regarding claim 27, Koch et al disclose “an optical element (16) having a raster element (42) for directing a light beam having a wavelength  $\leq$  193 nm (col. 1, lines 31-33); and a movable carrier (41) upon which said optical element is arranged, for positioning said raster element relative to said light beam (col.5, lines 35-38).”

Regarding claim 28, Koch et al disclose “a reticle plane, wherein said reticle plane is defined by a y-direction and an x-direction (col. 9, lines 38-39, where it is conceivable that a plane can have reference two-dimensional coordinates), and wherein said carrier is moveable in said x-direction (col. 5, lines 35-38).”

Regarding claim 31, Koch et al disclose “wherein said raster element is one of a plurality of raster elements on said optical element, wherein said light beam impinges onto said optical element (col. 5, lines 41-44), and said plurality of raster elements

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partition said light beam into a plurality of light bundles (col. 4, lines 28-30), and wherein said plurality of light bundles substantially overlap one another in a reticle plane (col. 10, lines 24-25)."

Regarding claim 32, "wherein said optical element is one of a plurality of optical elements arranged (col. 4, lines 29-30) on said carrier (41; base)."

Regarding claim 33, Koch et al disclose "wherein said raster element is one of a plurality of raster elements on said optical element (col. 4, lines 28-30)."

Regarding claim 34, Koch et al disclose "an illumination system, comprising a plate having (a) a raster element (52) situated thereon for directing a light beam having a wavelength  $\leq$  193 nm (col. 1, lines 31-33), and (b) an actuator for positioning said raster element relative to said light beam (col. 5, lines 35-38)."

Regarding claim 35, Koch et al disclose "wherein said actuator changes an orientation of said raster element relative to said plate (col. 5, lines 35-38 and 57-59)."

Regarding claim 36, Koch et al disclose "wherein said raster element is one of a plurality of raster elements on said plate (col. 4, lines 28-30 and col. 5, lines 53-54)."

Regarding claim 37, Koch et al disclose all of the claimed limitations and further disclose "a table (50; base) upon which said optical element is situated, for moving said optical element relative to said light beam (col. 5, lines 35-38)"

Regarding claims 38, 44 and 45, Koch et al discloses all of the claimed limitations and further discloses wherein said plurality of light bundles substantially overlap one another in a reticle plane of said illumination system and "define a ring

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field of illumination in said reticle plane (col. 6, lines 35-37 and 41-42), and wherein at least one of said plurality of raster elements is adjustable to change said ring field of illumination in said reticle plane (col. 6, lines 66-67; col. 7, lines 1-2; col. 8, lines 52-54)."

Regarding claim 39, Koch et al disclose the claimed limitations and further disclose "when adjusted to change said ring field of illumination in said reticle plane, also changes an illumination in an exit pupil of said illumination system (col. 10, lines 35-40)."

Regarding claims 40-42, Koch et al "wherein said at least one of said plurality of raster elements is tilttable", "displaceable" (col. 6 lines 21-24), and "replaceable (col. 5, lines 23-24, where any dimension of an array is preferred)."

Regarding claims 43 and 46, Koch et al disclose

- (a) tilting said at least one of said plurality of raster elements (col. 6, lines 21-24),
- (b) displacing said at least one of said plurality of raster elements (col. 6, lines 21-24), and

- (c) replacing said at least one of said plurality of raster elements (col. 6 lines 21-24), wherein said adjusting causes a change in a field of illumination" or "an illumination of an exit pupil (col. 6, lines 66-67; col. 7, lines 1-2; col. 8, lines 52-54)."

Regarding claim 47, Koch et al disclose all of the claimed limitations and further discloses "(b) a projection objective for imaging said object onto a light sensitive substrate (col. 4, lines 52-54 and 65-67)."

Regarding claim 48, Koch et al disclose "wherein said object is a pattern bearing mask (col. 2, lines 47-49)."

Regarding claim 49, Koch et al disclose "a method for manufacturing a microelectronic component, comprising using the projection exposure apparatus of claim 47 (col. 1, lines 6-9)."

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koch et al in view of Hatakeyama et al (6,015,976).

Regarding claim 29, Koch et al disclose all of the claimed limitations except "a reticle is moveable in a first direction."

However, having a reticle moveable in a first direction is routine in the art as taught by Hatakeyama et al (col. 17, lines 40-41). Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the reticle of Koch et al by having it allowable to move in a first direction for at least the purpose to adjust its alignment with the optical system.

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Regarding claim 30, Koch et al further disclose "wherein said second direction is substantially perpendicular to said first direction (col. 5, lines 35-38)."

*Conclusion*

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following discloses optical arrays utilized in a lithography system: McGuire Jr. (6,573,978), Johnson (6,498,685), Ohzawa et al (5,993,010), and Komatsuda (6,833,904).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Gutierrez whose telephone number is (571)-272-5922. The examiner can normally be reached on Monday-Friday: 7:30 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571)-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin Gutierrez  
Examiner  
Art Unit 2851

October 6, 2005



JUDY NGUYEN  
SUPERVISORY PATENT EXAMINER